Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Krammer F, Srivastava K, Alshammary H, et al. Antibody responses in seropositive persons after a single dose of SARS-CoV-2 mRNA vaccine. N Engl J Med. DOI: 10.1056/NEJMc2101667

Table of content

Supplemental Materials and Methods

- Study information
- SARS-CoV-2 antibody ELISA
- Acknowledgements

Supplemental References for Methods

Table S1 (Demographics of PARIS study participants included in this report)

Figure S1 (Immunogenicity of the two different SARS-CoV-2 RNA vaccines)

Study information. The PARIS (***P**rotection **A**ssociated with **R**apid **I**mmunity to **S**ARS-CoV-2*) study seeks to investigate the durability and effectiveness of SARS-CoV-2 immune responses in health care workers over time. Study enrollment started in April 2020 and is ongoing (N= 427 participants). The PARIS study protocol was reviewed and approved by the Mount Sinai Hospital Institutional Review Board (IRB-20-03374). All participants provided informed consent prior to collection of data and specimen. All specimens were coded prior to processing and antibody testing for all serum specimen was performed in a blinded manner. The current report represents a limited snapshot of this on-going longitudinal study. A total of 119 PARIS participants were vaccinated in 2020. Of these 110 participants, 88 (80%) received the BNT162b2/Pfizer vaccine and 22 (20%) received the mRNA-1273/Moderna vaccine.

PARIS participants that received SARS-CoV-2 vaccinations were invited to donate additional samples after the first vaccine dose. Antibody data pre- and post-vaccination were available for 110 of the 119 vaccinated participants (92%). The number of additional biospecimen provided after the first dose varied among participants; all participants with, at least, one post vaccine antibody data point available at the time of writing this report were included in the analysis.

Independent of whether or not additional blood specimen were collected, all PARIS participants received a questionnaire to query for the specific dates of SARS-CoV-2 vaccination and potential side effects. Responses to the survey were received from 232 of the 432 PARIS participants. 230 of those that returned a completed survey had received the first dose of the vaccine. 90 of the 110 participants (82%) for whom antibody results are presented also completed the vaccine side-effect survey. The survey queried injection side as well as systemic side effects with respect to severity, duration and the need for treatment and/or medical care. The demographics, vaccine type received and serostatus at study enrollement of the study participants included in this report are summarized in Table S1.

SARS-CoV-2 antibody ELISA: Antibodies to SARS-CoV-2 spike were detected using an established two-step ELISA described in detail in the following manuscripts (1, 2). The assay shows a performance of 100% specificity and 95% sensitivity in in-house evaluation.

Acknowledgment: We thank the PARIS study participants for their generosity and continued support of COVID-19 research.

References:

1. Stadlbauer D, Amanat F, Chromikova V, Jiang K, Strohmeier S, Arunkumar GA, Tan J, Bhavsar D, Capuano C, Kirkpatrick E, Meade P, Brito RN, Teo C, McMahon M, Simon V, Krammer F. SARS-CoV-2 Seroconversion in Humans: A Detailed Protocol for a Serological Assay, Antigen Production, and Test Setup. Curr Protoc Microbiol. 2020 Jun;57(1):e100. doi: 10.1002/cpmc.100. PubMed PMID: 32302069; PubMed Central PMCID: PMC7235504.

2. Stadlbauer D, Tan J, Jiang K, Hernandez MM, Fabre S, Amanat F, Teo C, Arunkumar GA, McMahon M, Capuano C, Twyman K, Jhang J, Nowak MD, Simon V, Sordillo EM, van Bakel H, Krammer F. Repeated cross-sectional sero-monitoring of SARS-CoV-2 in New York City. Nature. 2021 Feb;590(7844):146-150. doi: 10.1038/s41586-020-2912-6. Epub 2020 Nov 3. PubMed PMID: 33142304.

Table S1: Demographics, vaccine type and serostatus of the PARIS participants included in this report.

	Antibody responses		Post Vaccine Survey	
Age	N	%	N	%
18-29	16	15%	45	20%
30-39	53	48%	95	41%
40-49	13	12%	35	15%
50-59	19	17%	36	16%
> 60-69	9	8%	19	8%
All	110	100%	230	100%
Gender		%	N	%
Male	43	39%	71	31%
Female	67	61%	157	68%
Prefer Not To Say	0	0%	2	1%
All	110	100%	230	100%
Vaccine Type		%	N	%
mRNA-1273/Moderna	88	80%	74	32%
BNT162b2/Pfizer	22	20%	156	68%
All	110	100%	230	100%
Serostatus at PARIS Baseline		%	N	%
SARS CoV2 antibody positive	43	39%	82	36%
SARS CoV2 antibody negative	67	61%	148	64%
All	110	100%	230	100%

Footnote: 90 of the 110 participants for which antibody data were available also completed the post first dose vaccine survey.

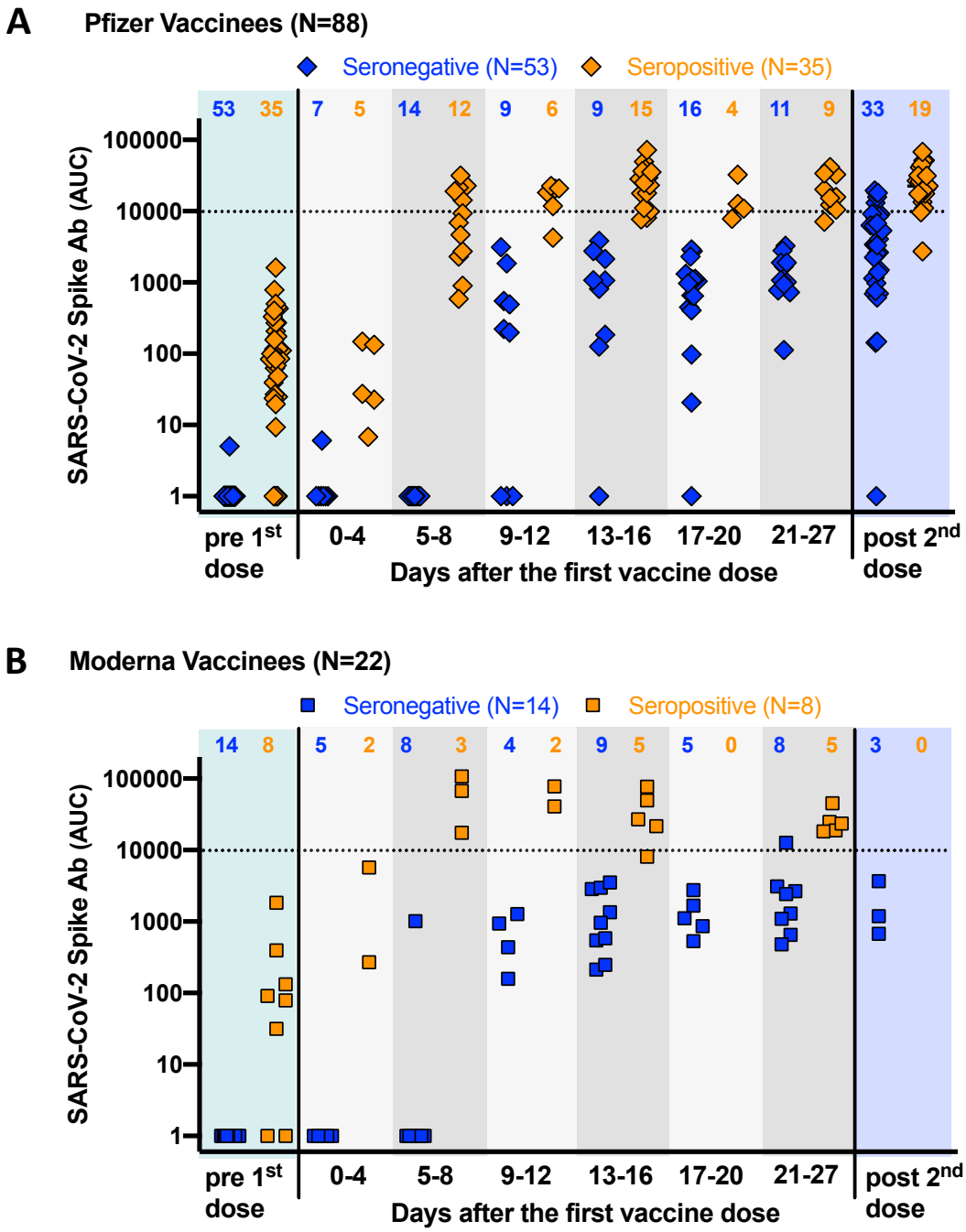

Fig. S1: **Immunogenicity of the two different SARS-CoV-2 RNA vaccines**.

Quantitative SARS-CoV-2 spike antibody titers (ELISA, expressed as area under the curve, AUC) for 88 participants that received the Pfizer vaccine (**Panel A**) and for the 22 participants that received the Moderna vaccine (**Panel B**). Because the Moderna vaccine was approved later in December 2020, the number of participants is lower and the follow-up is shorter.

"Pre 1st dose" represents the antibody response prior to vaccination while "post 2nd dose" indicates the immune responses mounted after the second vaccine dose. Note that some of the individuals with pre-existing immunity had antibody titers below detection (AUC of 1) at the time point prior to vaccination.